



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/382,929	08/25/1999	PAUL A. FARRAR	303.603US1	5871
21186	7590	01/21/2005		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER GRAYBILL, DAVID E	
			ART UNIT 2822	PAPER NUMBER

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/382,929

Applicant(s)

FARRAR, PAUL A. (8m)

Examiner

David E Graybill

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-10, 12, 14, 15, 18-23, 31-36, 38-46 and 75-92 is/are pending in the application.
- 4a) Of the above claim(s) 15, 18-23, 31-36, 38-46 and 75-92 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2 pages</u> . | 6) <input type="checkbox"/> Other: _____ |

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10, 12 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10 the scope of the language, "a non-structural component," is unclear because the terms "non-structural" and/or "component" appear to be given meanings repugnant to their usual meaning. To further clarify, the terms "non-structural" and "component" appear to be incompatible because the component is inherently structural. Further, the structure imparted to the component by the term "non-structural" cannot be determined.

In the rejections *infra*, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 6, 8-10, 12 and 14 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Juengling (6333556).

At column 3, lines 11-55, Juengling discloses the following:

An integrated circuit assembly comprising: an electronic chip 12b; and a conductive structure 14b embedded in a material layer 30 having a plurality of vaporization temperatures, the material layer is formed on the electronic chip and the conductive structure is physically coupled to the electronic chip; wherein at least one of the plurality of vaporization temperatures is about 400 degrees centigrade.

An integrated circuit assembly comprising: an electronic chip; and a conductive structure embedded in a plurality of materials 30, each of the plurality of materials having a different vaporization temperature, the plurality of materials is formed on the electronic chip and the conductive structure is coupled to the electronic chip; wherein at least one of the plurality of material is silicon dioxide; wherein at least one of the plurality of materials is carbon.

An integrated circuit assembly comprising: an electronic chip; and a conductive structure embedded in a material layer having a structural component having a structural vaporization temperature and a non-structural component having a non-structural vaporization temperature less than the structural vaporization temperature; wherein the structural

component is fabricated from silicon dioxide; wherein the non-structural component is fabricated from carbon.

To further clarify the disclosure of a chip 12b, a chip is defined as, "a small usually thin and flat piece (as of wood or stone) cut, struck, or flaked off": "chip." *Merriam-Webster Online Dictionary*. 2004. <http://www.merriam-webster.com> (15 Jan. 2005). Therefore, a chip is a small piece cut, struck, or flaked off. Moreover, 12b of Juengling is a piece because it is a part of a whole, and it is inherently small relative to anything large. Furthermore, the language "cut, struck or flaked off" is process language. Although Juengling does not appear to explicitly disclose the processes "cut, struck or flaked off," the product of Juengling inherently possesses any structural characteristics imparted by these process limitations. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-10, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (6350672) and Murata (5268587).

At column 4, line 59, to column 7, line 44 column Sun discloses the following:

An integrated circuit assembly comprising: an electronic substrate 60; and a conductive structure 66 embedded in a material layer 68, 70 inherently having a plurality of vaporization temperatures, the material layer is formed on the electronic substrate and the conductive structure is coupled to the electronic substrate; wherein at least one of the plurality of vaporization temperatures (that of 68) is about 400 degrees centigrade.

An integrated circuit assembly comprising: an electronic substrate; and a conductive structure embedded in a plurality of materials 68, 70, each of the plurality of materials having a different vaporization temperature, the plurality of materials is formed on the electronic substrate and the conductive structure is coupled to the electronic substrate; wherein at least one of the plurality of material is silicon dioxide "silicon oxide"; wherein at least one of the plurality of materials is carbon.

An integrated circuit assembly comprising: an electronic substrate; and a conductive structure embedded in a material layer having a structural component 70 having a structural vaporization temperature and a non-structural component 68 having a non-structural vaporization temperature less than the structural vaporization temperature; wherein the structural

component is fabricated from silicon dioxide; wherein the non-structural component is fabricated from carbon.

However, Sun does not appear to explicitly disclose that the electronic substrate is a dynamic random access memory chip; and wherein the conductive structure is fabricated from copper.

Nonetheless, at column 14, line 67 to column 15, line 5; and column 21, lines 1-6, Murata discloses that the electronic substrate 1 is a dynamic random access memory chip; and wherein a conductive structure 57 is fabricated from copper. Moreover, it would have been obvious to combine this disclosure of Murata with the disclosure of Sun because it would enable manufacture of a DRAM and reduce the migration phenomenon in the aluminum conductive structure of Sun.

Also, in the alternative, although Sun does not appear to verbatim disclose silicon dioxide, as cited, Sun discloses that the structural component is silicon oxide. In addition, at column 19, lines 39-41; column 20, lines 36-45; and column 32, line 67 to column 33, line 3, Murata disclose that silicon oxide 70 is silicon dioxide and further discloses silicon dioxide structural components 36 and 54A. Furthermore, it would have been obvious to combine this disclosure of Murata with the disclosure of Sun because it would facilitate provision of the silicon oxide of Sun.

Applicant's amendment and remarks filed 11-1-4 have been fully considered and are adequately addressed by the rejections supra.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

For information on the status of this application applicant should check PAIR:

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (703) 872-9306.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
18-Jan-05